NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

LAND SMOOTHING

(Ac.)

CODE 466

DEFINITION

Removing irregularities on the land surface.

PURPOSE

To improve surface drainage, provide for more uniform cultivation, and improve equipment operation and efficiency.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies on areas where depressions, mounds, old terraces, turn-rows, and other surface irregularities interfere with the application of needed soil and water conservation and management practices.

It is limited to areas having adequate soil depth or where topsoil can be salvaged and replaced.

This practice does not apply to the regular maintenance on irrigated land or on land that has been modified using practice standards Precision Land Forming (462) or Irrigation Land Leveling (464).

Federal, State, and Local Laws

Design and construction activities shall comply with all federal, state, and local laws, rules, and regulations governing activities in or along streams, pollution abatement, health, and safety. The owner or operator shall be responsible for securing all required permits or approvals and for performing all planned work in accordance with such laws and regulations. NRCS employees are not to assume responsibility for procuring these permits, rights, or approvals, or for enforcing laws and regulations. NRCS may provide the landowner or operator with technical information needed to obtain the required rights or approvals to construct, operate, and maintain the practice.

CRITERIA

The extent of rough grading required and tolerances of the finished smoothing job shall be in keeping with the requirements of the planned cropping system.

Construction operations shall be carried out in such a manner that erosion and air and water pollution are minimized.

Irregularities shall be smoothed to the degree required for the planned use.

The land to be smoothed shall be cleared of vegetative matter and trash.

The extent of rough grading required and tolerances of the finished smoothing job shall be in keeping with the requirements of the planned cropping system.

An adequate field investigation and survey shall be done to determine the following:

1. ***Location and scope of the land smoothing operation.***
2. ***Limitations due to soil depth. (soil borings may be necessary).***

3. Location of any appurtenant structures, conservation practices, and erosion and sediment control measures to be installed in conjunction with the land smoothing operations.

Depth of cuts shall be controlled so that exposure of subsoil and parent material is minimized. Surface soils shall be removed and stockpiled for reapplication to areas where subsoil or parent material are exposed.

Compaction of fill areas will be done by routing the construction equipment over these areas. Compaction will be adequate to prevent ponding that would result from settlement but not so intense that over-compaction an/or poor subsurface drainage results.

The length and degree of finished slopes shall be suited to the final land use and particular soil type.

Erosion shall be controlled within allowable limits using vegetative and structural measures as required. When the smoothed land will not immediately be planted to crops, or when no further construction activity will occur, the establishment of vegetation shall be planned. This may be accomplished by using the WV Standard for Critical Area Planting (342) or the WV standard for Pasture and Hayland Planting (512).

CONSIDERATIONS

Where possible, the ground surface should be plowed or disked prior to smoothing.

Effects on the water budget, especially on volumes and rates of runoff, infiltration, and evaporation.

Effect on erosion and the movement of sediment and soluble substances attached to sediment carried by runoff.

Effect on the visual quality of downstream water resources.

Potential for earth moving to uncover or redistribute toxic materials, such as saline soils.

Effects on wetland hydrology and/or wetland wildlife habitat.

Potential impacts to existing utilities.

Effects on soil loss due to increased wind erosion potential and subsequent deposition.

PLANS AND SPECIFICATIONS

Plans and specifications for land smoothing shall be in keeping with this standard and shall describe the requirement for applying the practice to achieve its intended purpose. ***Additional requirements for support data can be located in 210-VI-EFH, WV-45, "Preparation of Engineering Plans Design and Construction Support Data for Conservation Practices".***

Specifications may be developed from NEH-20 or the West Virginia 700 series, but normally the attached specification will suffice.

Plans and specifications should show or describe the following, as a minimum.

1. Limits of construction activity.

2. Extent of removal and disposal plans for excess vegetative matter and trash.

3. Depth of removal and stockpiling requirements for surface soil.

4. Extent and depth of disking required.

5. Requirements for fill areas including lift thickness, compaction specified, overfill, and moisture content.

6. Vegetative measures.

7. Erosion control measures.

8. Pollution abatement for water and air.

Construction Specifications

1. The land to be smoothed shall be cleared of excess vegetative matter and trash.

2. Surface soil shall be removed from the area to the depth shown on the drawings and stockpiled on the outer perimeter of the work area.

3. ***If required, the ground surface shall be plowed or disked prior to the smoothing operation.***

4. ***At least three passes of a land plane or leveler should be made over the land to be smoothed. The passes should consist of one on each diagonal and one generally in the direction of drainage.***

5. ***Irregularities that would not be removed by three passes of a land plane or leveler should be rough graded to a more uniform topography prior to the smoothing operation.***

6. ***Lift thickness, compaction, overfill allowance, and moisture content of the fill material shall be as described on the drawings.***

7. ***All smoothing operations shall be done to the neat lines and grades shown on the drawings.***

8. ***Construction shall be done in such a way that chemicals, fuels, lubricants, and waste materials will not pollute air and water. Erosion, air pollution, and water pollution shall be minimized and held within legal limits.***

OPERATION AND MAINTENANCE

Actions shall be carried out to insure that this practice functions as intended. Such actions shall include performing maintenance when needed to insure that surface irregularities are maintained at the degree of smoothness required.

Land smoothing is normally done as preparation for, or in conjunction with, other conservation practices. The operation and maintenance of smoothed land may be incorporated into the O&M plan for those other practices. Items that should be considered include:

1. ***Periodic inspections.***

2. ***Repair of eroding areas.***

3. ***Filling of minor depressions that result from settlement or tillage.***

4. ***Repair, fertilization, and liming of vegetation (if vegetation is part of the permanent practice).***